INSTRUCTION BOOK GEI-27391

FOR TRIP SURGE GENERATOR, CAT. NO. 9159534G1

AND TRIP CIRCUIT UNIT, CAT. NO. 9159535G1

GENERAL ELECTRIC CO.

SCHENECTADY, N. Y.

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These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

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The purpose of this equipment is to produce a sharp negative pulse of about 62 KV for tripping a large surge generator. Photograph No. 1054619 shows the complete outfit and photograph No. 1054620 the trip circuit part without its cover. It is designed for use with a cathode ray oscillograph of the HC-25 series.

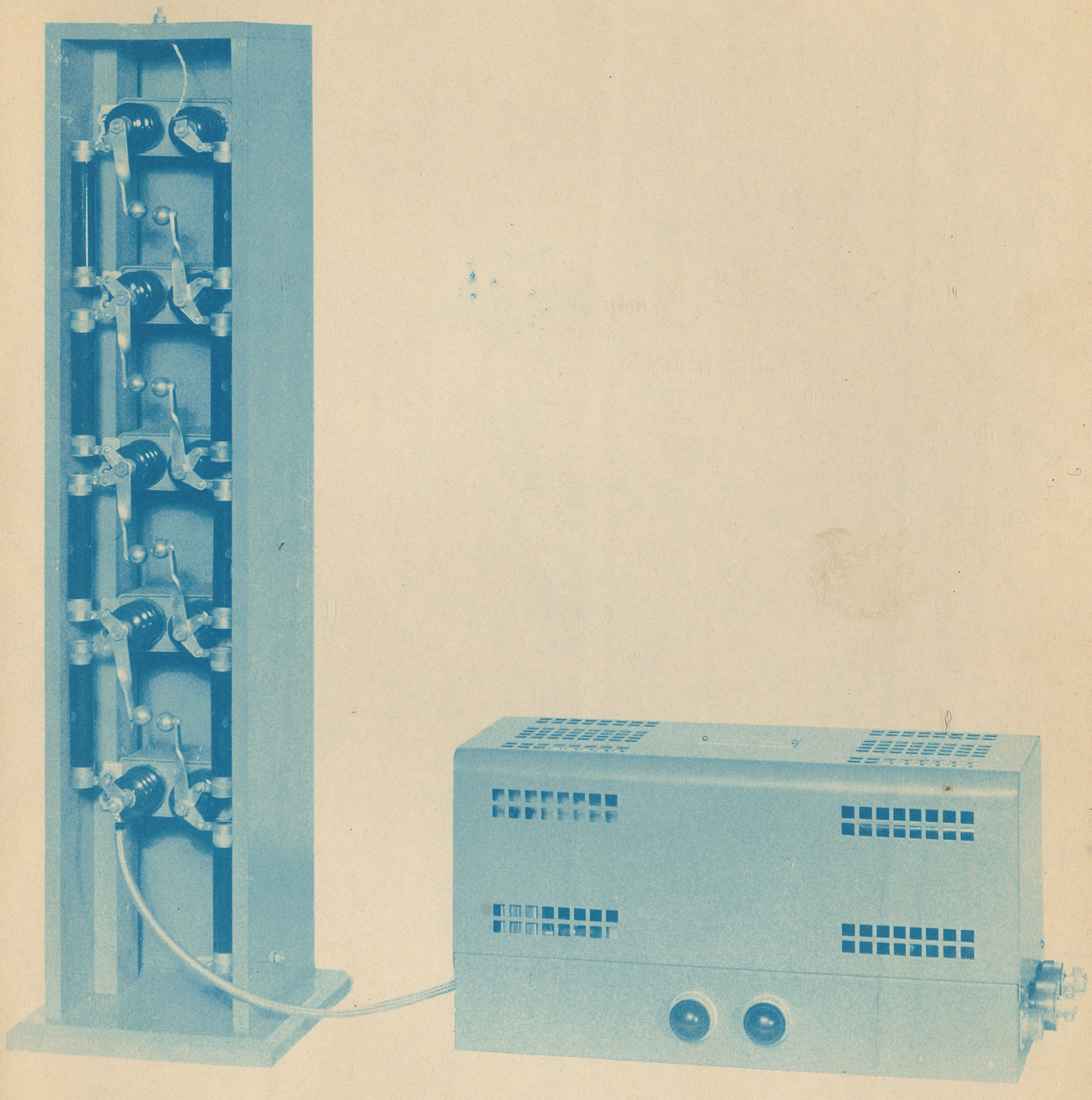
The diagram M-5112535 shows the connections. The trip circuit unit contains a high voltage hydrogen filled thyratron, a rectifier, power transformer and filament transformers. The power transformer is supplied thru a separate receptacle so that it may be interlocked with the power supplied to the main surge generator. The time delay relay holds off power for five minutes to give the thyratron time to heat.

The five capacitors in the trip surge generator are charged to 12.5 KV. The sphere gaps are adjusted to hold perhaps 15 or 20 KV so that they will not spark over spontaneously. The thyratron is supplied with -50 volts bias thru the coaxial cable from the HC-25 oscillograph. The oscillograph also supplies a positive pulse for firing the thyratron. This pulse is produced by the oscillograph sweep circuit at the proper instant to start the surge at some

convenient point on the screen. Firing the thyratron is the equivalent of closing a switch so that the terminal of the capacitor in the trip surge generator which is connected to the thyratron plate is suddenly lowered to ground potential. This causes its other terminal to rise the same amount thereby doubling the voltage across the first gap. As this gap sparks over the voltage on the next one is tripled and therefore it also is forced to spark over. As the remaining gaps spark over the capacitors are connected in series thru the sparks thereby adding up their voltages to give 62 KV at the top terminal.

This 62 KV pulse is applied to the three electrode trip gap of the large surge generator thru some resistance of about 50,000 or 100,000 ohms. This resistor is furnished by the surge generator builder and is necessary to limit the amount of power which can be discharged back into the trip surge generator.

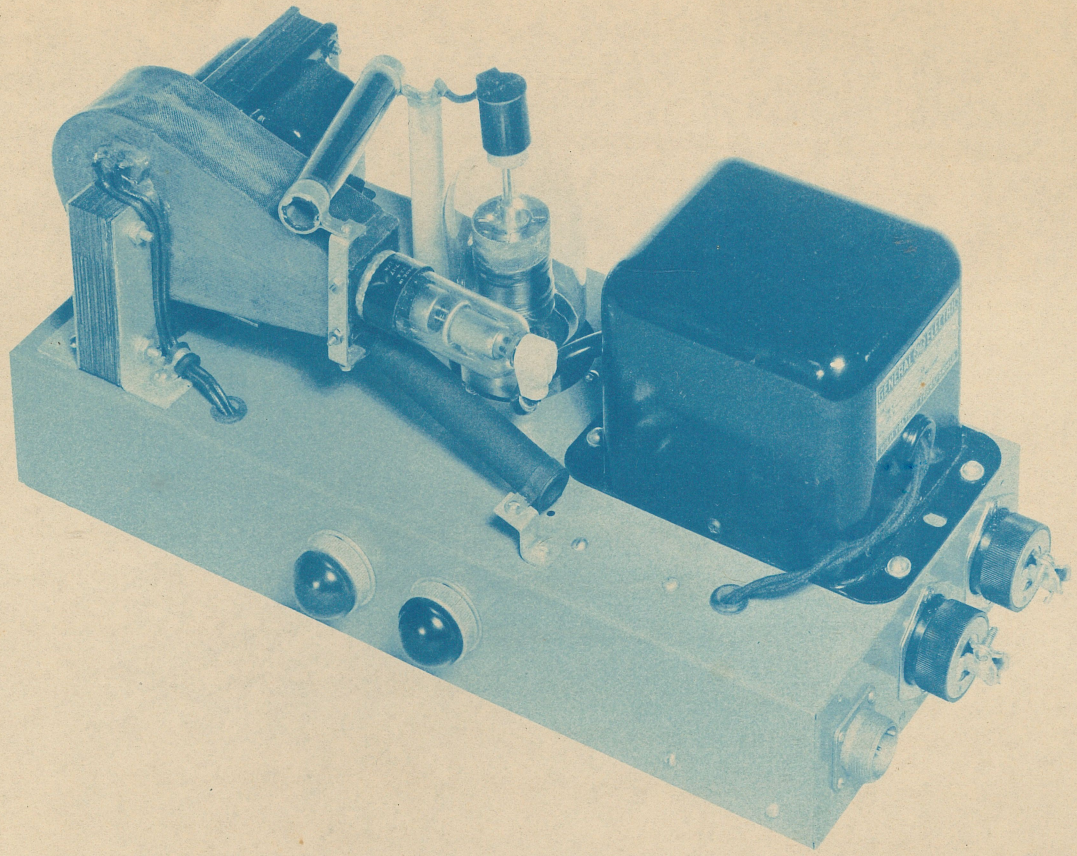
The sharp pointed wire pointed at one of the spheres of the lowest gap is for producing a little corona. This corona ionizes the air in the gap so that any tendency for delay in sparking over is eliminated. The point should be set about 3/4" or so from the sphere so that the corona is visible but not enough to cause sparkover from the point.



1054 619 TRIP-CIRCUIT UNIT AND TRIP-SURGE GENERATOR, CAT.9159534G1.

537.4 E369.9

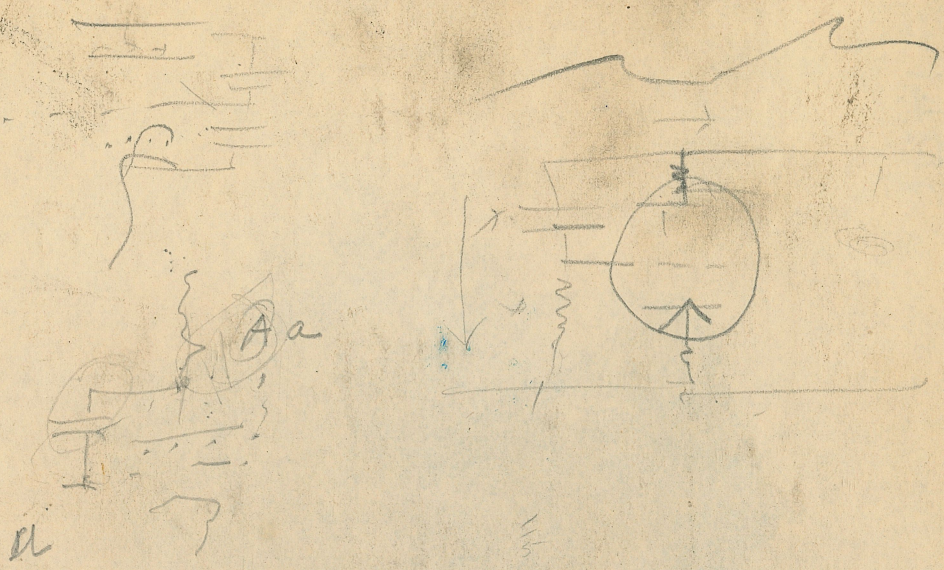
6-2-48



1054 620 TRIP-CIRCUIT UNIT, CAT.9159535G1, WITHOUT CASE.

537.4 E369.9

6-2-48



$C_{IN} = C_{gk} + C_{gp}(1+A)$

200
100